Light and Lighting

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A.P.L.E. Conference

WE give elsewhere (pp. 123-128) an account of the A.P.L.E. Conference held in Glasgow from September 11-13—noteworthy for the coming of age of the Association in the present year.

Except for the brief session in London in 1943 this is the first held since pre-war days, when the conference was an annual event. Mr. E. J. Stewart, who has borne the burden of presidency throughout the war period, remarked that his address was the third delivered by him.

Mr. Stewart's address gave an excellent resume of present problems, and he and Mr. Ward gave a useful indication of what is being done to solve them in Glasgow.

It is to the credit of the Secretary (Mr. H. O. Davies) that although the Conference was in some respects inevitably on a smaller scale than in pre-war days, so much of the atmosphere of the past was recaptured. This resumption of activities is an encouraging sign for the future. It is particularly interesting to note that an invitation has been received to hold the 1947 meeting in Paris.

I.E.S. Convention

Some useful suggestions have been made in response to the note on the above subject in our last issue, and plans for the arrangements in May, 1946, are maturing. There is, however, one point we have been asked to make clear in connection with the proposed demonstrations. This display is primarily staged for I.E.S. members as a feature of the Conversazione on the opening evening. It may subsequently be open to inspection by those outside the Society's ranks, but it is perhaps a little misleading to describe it as an "exhibition" in the usual sense. The aim of the display will be scientific, and any information presented in regard to exhibits, which will be classified by subject, will be such as to explain their nature and purpose. The display, therefore, cannot afford opportunities for exhibits by firms (in the manner, for example, of the British Industries Fair that was held in pre-war days at Birmingham, or the exhibitions accompanying A.P.L.E. Conferences). It will be understood that no references to the names of firms or to trade names for exhibits can appear—though no doubt an opportunity will be found of making due acknowledgment of the services of those who have helped to make the show a success.

"Let Us See"

In our last issue mention was made of the film bearing the above title prepared by the I.E.S. in America, who have kindly put a specimen at the disposal of our Society. This film, which illustrates the benefits of good industrial lighting, will be shown to I.E.S. members at the E.L.M.A. Lighting Service Bureau (2, Savoy-hill, London, W.C.), at 5 p.m. on Wednesday, October 10, following the meeting of the Areas Joint Committee. Representatives of Areas will thus have an opportunity of seeing the film and of making arrangements for it to be shown subsequently to the various centres if they so desire.

Award of Gold Medal to Preston S. Millar

We note with pleasure the award of the Gold Medal of the American I.E.S. to Mr. Preston S. Millar, who for nearly 50 years has been an outstanding figure in the lighting field. A past president of the American I.E.S., who has taken a leading part on many of their committees, Mr. Millar is also a member of our own Society of old standing, and has an international reputation as President of the Electrical Testing Laboratories in New York.

Forthcoming I.E.S. Meetings

(Provisional List)

SESSIONAL MEETINGS IN LONDON

1945.

Oct. 9th. Mr. H. C. Weston, **Presidential Address.** (*At the School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.*2.) **6 p.m.**

Oct. 10th. Demonstration of **Film on Industrial Lighting (" Let us See ").** (*At the E.L.M.A. Lighting Service Bureau*, 2, *Savoy Hill, W.C.*2.) **5 p.m.**

Nov. 13th. Dr. J. N. Aldington on **Bright Light Sources (Part II).** (*At the E.L.M.A. Lighting Service Bureau*, 2, *Savoy Hill, W.C.*2.) **6 p.m.**

MEETINGS OF CENTRES AND GROUPS

1945.

Oct. 1st. Address by the Chairman (Mr. T. C. Holdsworth). (*At the Electricity Showrooms, The Headrow, Leeds.*) **6 p.m.**

Oct. 2nd. Mr. E. P. Mawson on **Planning for Recreation : with Special Reference to Lighting.** (*At the Electricity Showrooms, Market Street, Huddersfield.*) **7 p.m.**

Oct. 2nd. Dr. J. H. Nelson on **Automobile Lighting.** (*In the Demonstration Theatre of the Electricity Dept., Charles Street, Leicester.*) **6 p.m.**

Oct. 3rd. Mr. E. B. Sawyer on **Illumination Design.** (*At the Liverpool Corporation Electricity Showrooms, Whitechapel, Liverpool.*) **6. p.m.**

Oct. 3rd. Mr. T. O. Freeth on **Domestic Lighting.** (*At the Minor Hall, Oxford Street, Newcastle-on-Tyne.*) **5.45 p.m.**

Oct. 4th. Mr. W. J. G. Davey on **Gas Street Lighting.** (*At the Corporation Gas Showrooms*, 522, *Sauchiehall Street, Glasgow.*) **7.0 p.m.**

1945.

Oct. 5th. Mr. J. M. Waldram on **The Measurement of the Photometric Properties of the Upper Atmosphere.** (*At Cardiff.*)

Oct. 5th. Address by the Chairman of the Birmingham Centre (Mr. F. F. Middleton). (*At the Imperial Hotel, Temple Street, Birmingham.*) **5.30 p.m.**

Oct. 5th. Mr. L. G. Applebee on **The Civic Theatre : Its Lighting and Planning.** (*At the Heriot-Watt College, Chambers Street, Edinburgh.*) **6 p.m.**

Oct. 5th. Messrs. C. S. Caunt, R. J. W. Briddon, L. D. Schofield on **A Symposium — Light-Measurement, Control and Application.** (*In the Lecture Theatre of the City of Nottingham Gas Dept., Parliament Street, Nottingham.*) **5.30 p.m.**

Oct. 9th. Luncheon and Address by the Chairman of the Sheffield Centre (Dr. A. J. Holland). (*At the Royal Victoria Hotel, Sheffield.*) **12.30 p.m.**

Oct. 11th. Address by the President (Mr. H. C. Weston). (*At the Reynolds Hall, College of Technology, Sackville Street, Manchester.*) **6 p.m.**

Oct. 17th. Visit to Chesterfield Glass Works of the British Thomson-Houston Co., Ltd. (*Arranged by the Sheffield Centre.*)

Oct. 19th. Address on Infra-Red Radiation. (*At Radiant House, Bristol.*) **7 p.m.**

Oct. 23rd. Mr. R. O. Ackerley on **Interior Lighting.** (*Joint Meeting with the I.E.E. Scottish Centre.*) (*At the Institute of Engineers and Shipbuilders*, 39, *Elmbank Street, Glasgow.*) **7 p.m.**

Oct. 24th. Mr. R. O. Ackerley on **Some Factors Affecting the Design of Electric Lighting Installations for Building Interiors.** (*At Heriot-Watt College, Chambers Street, Edinburgh.*) **6 p.m.**

(Secretaries of Centres and Groups are requested to send in particulars of any changes in programmes, mentioning subject, author, place, date and time of meeting ; summaries of proceedings at meetings (which should not exceed about 250–500 words) and any other local news are also welcome.)

1945.

Oct. 27th. Mr. S. W. Richards on **Lighting in Hazardous Places.** (*At Cardiff.*)

Nov. 1st. Address by the President (Mr. H. C. Weston). (*At the Institute of Engineers and Shipbuilders, 39, Elmbank Street, Glasgow.*) **7 p.m.**

Nov. 2nd. Address by the President (Mr. H. C. Weston). (*At Radiant House, Bristol.*) **7 p.m.**

Nov. 2nd. Joint Meeting with the Assoc. of Supervising Electrical Engineers. (*At the Imperial Hotel, Temple Street, Birmingham.*) **5.30 p.m.**

Nov. 2nd. Mr. K. C. Oldham on **Signs and Display Advertising.** (*In the Lecture Theatre of the City of Nottingham Gas Dept., Parliament Street, Nottingham.*) **5.30 p.m.**

Nov. 5th. Mr. P. Hartill on **Illumination and Illusion.** (*At the Sheffield University, Western Bank, Sheffield.*) **6 p.m.**

Nov. 6th. Dr. J. H. Nelson on **Motor Car Headlamps and the Prevention of Dazzle.** (*In the Electricity Showrooms, Market Street, Huddersfield.*) **7 p.m.**

1945.

Nov. 6th. Lighting from the Contractor's Standpoint. (*In the Demonstration Theatre of the Electricity Dept., Charles Street, Leicester.*) **6 p.m.**

Nov. 7th. Dr. J. H. Nelson on **Motor Car Head Lamps and the Prevention of Dazzle.** (*At the Electricity Showrooms, The Headrow, Leeds.*) **6 p.m.**

Nov. 7th. Mr. E. H. Elliott on **Photometry.** (*At the Minor Hall, Oxford Street, Newcastle-on-Tyne.*) **5.45 p.m.**

Nov. 8th. Mr. R. G. Williams on **Applied Colour Lighting.** (*At Newport, Mon.*)

Nov. 8th. Mr. H. A. Miller on **Cold Cathode Light Sources.** (*At the Liverpool Corporation Electricity Showrooms, Whitechapel, Liverpool.*) **6 p.m.**

Nov. 8th. Mr. W. T. F. Souter on **The Lighting of Public Buildings.** (*In the Reynolds Hall, College of Technology, Sackville Street, Manchester.* **6 p.m.**

Nov. 9th. Dr. J. H. Nelson on **Polarized Light—Some Practical Applications** (*At the Heriot-Watt College, Chambers Street, Edinburgh.*) **6 p.m.**

Nov. 16th. Mr. W. J. G. Davey on **Short Cuts to Illumination.** (*Meeting of the Gloucester and Cheltenham Group. Meeting Place to be announced.*)

Classes in Illuminating Engineering

We learn with pleasure that arrangements are now complete for classes in Illuminating Engineering to commence at the Stow College, Shamrock-street, Glasgow. Enrolment opens on October 3, and the fee for the course will be 10s. We hope that all lighting firms with branches in Glasgow and its vicinity will bear this course in mind and will encourage their junior members to attend.

It is to be hoped that this enterprising example will be followed in other localities, and we shall be glad to hear from any I.E.S. members or others anxious to attend courses of this description.

Stage Lighting

Mr. L. G. Applebee gave a lecture on this subject to the I.E.S. Huddersfield Group on September 4, when there was a good attendance reinforced by members of local amateur dramatic societies. After tracing the early history of stage lighting, Mr. Applebee made special reference to colour effects and the use of the cyclorama, the projection of scenery, and other modern devices, well illustrated by lantern slides. In conclusion, figures for the electrical loads of theatres, varying from 60-70 k.w. up to 4,500 k.w. for the larger installations, were given.

A vote of thanks was proposed by Mr. J. T. Thornton. In the absence of Dr. Whitaker, Mr. E. Lunn, vice-chairman of the Group, presided.

A.P.L.E. Conference

(Held in Glasgow, September 11th—13th, 1945)

(Communicated)

The coming of age of the Association of Public Lighting Engineers was marked by a record attendance of over 800 delegates and members at the Conference held in Glasgow from September 11 to 13 under the presidency of Mr. E. J. Stewart.

Mr. Stewart has carried the burden of the office of president throughout the war years and at the annual general meeting, held at the Royal Technical College on the Tuesday morning, it was announced that he and the other officers had been re-appointed for the ensuing year.

This annual general meeting was held immediately after the opening ceremony, at which the delegates were cordially welcomed to Glasgow by the Rt. Hon. the Lord Provost (James Welsh, Esq.) in a very happy speech, to which Mr. E. C. Lennox, a past president of the Association, responded. A telegram of loyal congratulations on the happy end to hostilities was sent to H.M. the King and a gracious message of thanks was received later in the proceedings. The Conference gave a most enthusiastic welcome to its first president, Mr. S. B. Langlands who referred in jovial terms to the coming to manhood of the Association which he had helped to nurse in infancy.

The President then welcomed MM. Gaymard and Herzog, public lighting engineers of Paris, who expressed their pleasure at being able to attend the meetings and listen to the papers. He also announced that, in the Association's competition for papers, the first prize had been won by Mr. Norman Axford, of Hull, for a paper on the "Relation of Street Lighting to Road Safety," and the second prize by Mr. F. M. Hale, of Glasgow, for his paper on the "Relation of Photometry to Street Lighting." It was announced that both these papers would in due course be published in "Public Lighting."

Qualification for Membership

Mr. T. Wilkie (Past-President) then presented to the meeting the proposals of the Council for amendments to the Articles of Association and to the By-Laws, the most important of these proposals being to lay down definite minimum qualifications for membership of the Association. These were fully discussed at a further general meeting of members held on the Thursday afternoon, after the conclusion of the Conference. It was then agreed that they should be accepted in principle and later submitted to a general meeting to be held in London. It was also agreed to request the Council to continue negotiations with the Board of Trade with the object of changing the name of the Association to that of the Institution of Public Lighting Engineers.

The President's Address

The Conference re-assembled in the afternoon to listen to the Presidential Address. Mr. Stewart said he regretted having to impose on the delegates yet another address, but he would "try to make it a wee one." He first discussed the limits imposed by the need for economy, both of fuel and of money, in the present period and said that the war had shown that, even with low-power sources, high mounting was of the greatest advantage in promoting good visibility. The 25 ft. mounting height, which in pre-war days had always been associated with outputs of the order of 300-500 watts, was now being used with 100-watt lamps and visibilities of 100 yards and over were obtained, and drivers did not use their headlights. The

policy in Glasgow was now to provide high mounting, not only in the main thoroughfares, but in all streets in which there was any traffic worth considering.

Mr. Stewart then went on to speak of Glasgow's 50-year-plan, as put forward by the City Engineer, Mr. Robert Bruce, and to discuss some of its implications from the public lighting engineer's point of view. This plan, as far as road transport was concerned, showed three main classes of thoroughfares—arterial, sub-arterial, and local, and in the speaker's opinion it was doubtful whether the M.O.T. Committee's two-fold classification was adequate for these or, in fact, for the types of roads envisaged for the cities of the future with their motor highways, cyclist and pedestrian reservations, electric vehicle tracks, subways, shopping centres, and residential streets. "If," said Mr. Stewart, "there is to be segregation of function among roads, some segregation and divergence of form are suggested in the types of road lighting which are to accompany." He then went on to say that he expected to see in the future much more lighting of arterial roads intended for fast motor traffic, "if not between London and Glasgow, at least between Glasgow and Edinburgh.

In conclusion, Mr. Stewart made reference to regional planning and the relations between the National Government and Local Authorities in the planning and control of public lighting and in the payment for it. He concluded with the very apt remark that, just as remote and central mechanical control of lighting and extinguishing could be carried too far, so there were dangers in over-centralisation of administrative control of public lighting.

Fuel Economy

After a vote of thanks to the President for his address had been proposed by the Vice-President, Mr. W. N. C. Clinch, and carried by acclamation, the Conference was addressed by Mr. R. Kelf-Cohen, Under-Secretary of the Ministry of Fuel and Power, who made a forcible and telling speech urging the vital necessity for local authorities to support the Minister in his recent appeal for economy in the consumption of fuel for public lighting. This was, he said, a purely temporary measure forced on the Minister by the present emergency in the fuel situation. There was not only the actual saving, which would be brought about directly by the economy measures suggested, but there was also the secondary effect produced by the emphasis it gave in the eyes of the man in the street to the appeals made to him for fuel economy in the domestic and other fields.

Some of the objections to the Minister's proposals were voiced by various delegates. The risk of increase in accidents and in crime was mentioned, and the difficulty of traffic circulation in the early morning at that period of the year when it was still dark at seven o'clock. Mr. Kelf-Cohen pointed out that the proposal to extinguish at midnight was not rigid, and it was hoped that local authorities with special problems would discuss them with the regional controllers.

Glasgow's Street Lighting

The second half of the Session on Tuesday afternoon was devoted to a paper by Mr. J. M. Ward, Assistant Inspector of Lighting in Glasgow, who described many of the features of public lighting in the city. He first referred to the "moonlighting" systems, provided in September, 1944, when 300 miles of streets were lighted to the 0.2-ft.c. standard. High mounting was very much favoured in Glasgow, nearly half of the 20,000 odd electric lanterns being mounted at 25 ft. and another 3,000 at 20 to 22 ft. For the former, steel poles 37 ft. 6 in. long were employed.

Mr. Ward then gave some details of the "Glasgow" lantern, designed to take lamps of 300 to 1,500 watts, but at present fitted with 100- to 300-watt lamps as a measure of economy. This lantern had been constructed with due regard to its easy maintenance from a tower wagon, and it was free from the small screws in difficult positions and tricky gadgets so frequently deplored by public lighting engineers.

A considerable section of the paper was devoted to a description of the cen-

tral control system employed in Glasgow. The city was divided into seven sections, and in five of these switchboards were in operation controlling large numbers of street and stair lamps. Several different types of relay were in use, and it was clear that the author of the paper did not feel that the last word had been said in perfecting such systems of control.

An important part of the lighting department's responsibility was the maintenance of the 95,000 stair lights, of which over two-thirds were gas. 12,500 of the electric lights were centrally controlled, the remainder and all those lit by gas having to be turned on or off by the 650 lighters employed by the department. In view of the expense of any extensive change-over, Mr. Ward expressed the view that the "Leerie" was "likely to be kenspeckle in Glasgow for another 20 years or more."

Civic Reception

On the Tuesday evening, the delegates and ladies were received at the City Chambers by the Lord Provost and Councillors and, after complimentary speeches of welcome and of thanks, were entertained with a delightful programme of music, refreshments, and the inspection of Glasgow's civic headquarters.

The Lighting of Bends

On Wednesday morning, September 12, the delegates listened to an interesting paper by Mr. F. F. Middleton, who took as his subject the lighting of bends and road junctions. His basic argument was that, in order to make as visible as possible a pedestrian about to step off the pathway into the track of an oncoming vehicle, it was necessary to provide good brightness conditions, not only on the roadway itself, but also on the path which the pedestrian was quitting. He said, therefore, that the boundaries adjacent to the carriageway at bends and junctions should be provided with a brightness approximately equal to that of the carriageway.

After a description of the mechanism underlying the production of brightness backgrounds by means of a street lantern, Mr. Middleton showed some iso-candle diagrams for different types of light sources. He traced on these diagrams the boundary lines of sections of roadway, both straight and curved, with their neighbouring footways, and indicated how such diagrams could be used to study the extent to which the light from a lantern achieved the result which, in the earlier part of his paper, he had shown to be desirable.

A good discussion followed. Mr. F. C. Smith pointed out that the brightness conditions were not static, but changed as the driver moved along the road. Alderman Thraves urged that bends should be super-elevated, not cambered, while Mr. Greaves said that at bends he preferred more lamps at shorter spacings and lower mounting heights.

The Conference Luncheon

The luncheon at mid-day on Wednesday was held at the Grosvenor Restaurant. Unfortunately, owing to the prevailing restrictions, the numbers had to be limited to about 200, but, nevertheless, the function was very successful and provided an opportunity for Mr. Stroud, the President of the Illuminating Engineering Society, to propose the toast of the Association of Public Lighting Engineers. He referred very felicitously to the coming-of-age of the Association and to the good work which had been done by its Secretary, Mr. H. O. Davies. Mr. Stewart, in replying to the toast, said he always looked on the I.E.S. and the A.P.L.E. as good allies in the cause of better lighting. Mr. Wilkie then proposed the toast of the Corporation of the City of Glasgow, and this was replied to by Mr. Esselmont, the City Chamberlain.

The Street-Lighting Specification

On Wednesday afternoon the session was devoted to consideration of the revised draft of the British Standard Specification for Street Lighting which had recently been sent out for comment by the B.S.I. Copies were handed to the delegates present, and the subject was introduced by Dr. J. W. T. Walsh, chairman of the drafting sub-committee responsible for the preparation of the

new clauses. After a brief sketch of the historical background behind the specification Dr. Walsh said that the new draft had been commenced before the war, as a result of the recommendations of the M.O.T. Committee. He emphasised that the present draft was confined to the M.O.T. group A roads, main traffic routes, and that it was still very much at the draft stage and subject to modification in the light of constructive comments which might be received. He then went through the document, drawing attention to those parts on which there was likely to be most difference of opinion.

The clause which had proved most difficult to draft, said Dr. Walsh, was that dealing with a test for the light distribution from the lanterns. The draft included a dual test, viz., a determination of the polar curve of c.p. distribution, which had to be made in all cases, and secondly a test of the light reaching the roadway, which could be applied if desired by the parties using the specification. This test involved the measurement of the illumination on a vertical test-plate at a specified point in the street and the calculation of an "acceptance number" which had to attain a certain minimum value. This "acceptance number" was not a figure of merit or yardstick by which the excellence of the installation could be judged, but was one of several hurdles which the installation had to clear. The clause, as set out in the draft, dealt only with a staggered arrangement of lanterns at spacings of 100-180 ft. If the clause, or something like it, were approved, similar clauses would be drafted to deal with other types of lantern arrangement.

In the course of the discussion which followed, Dr. English criticised the position chosen for the test point in arriving at the acceptance number. He pointed out that it might react unfairly on an asymmetric type of light distribution. Mr. L. T. Minchin said that he felt it was unfortunate that the luminous flux emitted in the upper hemisphere was included in reckoning the total flux given by the lantern. This might mean that a lantern giving 5,000 lumens, of which 30 per cent. were emitted upwards, gave only as much light on the roadway as one giving 3,500 lumens, all of which were cast downwards.

Tour of Glasgow Street-Lighting

On the Wednesday evening delegates were taken in coaches for an itinerary covering the most interesting features of the street-lighting of the city and its immediate surroundings. A good many availed themselves of this trip in spite of the severe thunderstorm which broke that evening and which caused Mr. Stewart to remark, on the following day, that his department was not responsible, although he was not infrequently addressed as the "lightning inspector."

At the lighting department's building a very interesting series of demonstrations of the testing equipment was staged by Mr. F. M. Hale, who was also responsible for the exhibition in the basement, to which reference will be made later.

Street Lantern Design

The morning session on Thursday, September 13, was devoted to a paper by Messrs. J. G. Christopher and J. S. Smyth on "Engineering Principles in Street Lighting Lantern Design." In Mr. Christopher's absence on Service the paper was presented by Mr. Smyth, who started by saying that during the last ten years there had been radical changes in the outlook governing the design of street lanterns. Modern lanterns were designed not to give the appearance traditionally associated with a street lantern, but to obtain the best possible service from the light sources used in them. He listed the requirements as rigidity and precision in the assembly of the components, resistance to weather and to corrosion, ability to withstand shaking and vibration, satisfactory temperature conditions in operation, simple erection and wiring, and ease of maintenance. The appearance, too, should be both pleasing and unobtrusive.

The portion of the paper dealing with performance under difficult weather conditions and the resistance to corrosion and to vibration was illustrated

with a film in which the audience was shown how lanterns were tested in these respects. As seen on the screen, these tests seemed very exacting, especially the shaking test, but Mr. Smyth mentioned that it had been found in a particular case of an installation on trolley-bus poles that lanterns were shaken with a vertical amplitude of some 6 in. at a frequency of about 180 cycles per minute.

Resistance to corrosion was tested by exposing fittings to an atomised spray of salt water. These tests were carried out over a period of several months and an example of bad corrosion of bolts in aluminium castings was shown. It was pointed out, both by the author and during the discussion, that the chief trouble was electrolytic action between the aluminium alloy and the metal used for the bolt. In the discussion, Dr. English mentioned that a great deal of work had been done during the war on the corrosion of aluminium alloys, and he felt sure that this would prove exceedingly useful in overcoming this particular trouble of the lantern designer.

Several speakers emphasised the importance of avoiding small and awkward fitments to be operated or adjusted when the fitting was in service. It was pointed out that an operation which might be very easy to carry out when one was indoors might well prove very troublesome when it had to be done on the top of a tower-wagon on a rainy and windy night.

Mr. Colquhoun made the suggestion that there should be some "clearing house" through which more co-operation between lantern designers and public lighting departments could be achieved. He referred to a remark in Mr. Ward's paper suggesting that lantern makers, before putting their products on the market, should hand them over to the nearest lighting department and let the maintenance man try making adjustments on a stormy night from a tower wagon. He thought that possibly the B.S.I. might act as such a clearing house. Mr. W. J. Jones said that the life of the 400 and 150 watt mercury vapour discharge lamps was now 3,000 hours.

Commercial Public Lighting Departments

On Thursday afternoon Mr. E. S. Harris, the Public Lighting Superintendent of the Gas Light and Coke Company, presented a paper describing the work of the public lighting department of a large commercial undertaking having contractual obligations with regard to the street lighting provided in the areas of many local authorities. Mr. Harris first described the organisation of the department as regards personnel and the measures taken to ensure the maintenance of a high standard of efficiency. He then went on to outline the work of such a department in planning new installations and described the research and technical facilities provided.

In the discussion Mr. H. W. Lodge urged the need for a standard specification for burners, and Mr. F. C. Smith said that such a specification had now almost been completed. The fact that modern gas lamps were designed to take a standard rate of flow at a standard pressure was emphasised by Mr. Crawford Sugg. Mr. L. T. Minchin drew attention to the need for choosing a lantern with a light distribution suitable to the particular road surface and the mounting arrangement used. A table to assist in this was given in Mr. Harris's paper.

Wilful Damage

Several speakers, not only at this session but throughout the conference, referred to the prevalence of wanton damage to street lights, and the president, in his address, said that wilful damage had grown in recent years to be one of the public lighting engineer's major problems. Mr. Harris said that at least in one district an approach had been made to the schools and the heads had been very co-operative in the matter. He suggested that similar steps might well be taken in other districts.

Paris in 1947?

At the conclusion of the conference, after votes of thanks to the City of

Glasgow and to the authorities of the Royal Technical College had been passed by acclamation, the president announced that the Association had received through MM. Gaymard and Herzog a cordial invitation to hold its conference in Paris in 1947.

Exhibition of Lighting Equipment

For the first time since 1938 a very popular feature of the A.P.L.E. Conferences was restored, viz., an exhibition of street lighting equipment. This was naturally on quite a modest scale in comparison with previous exhibitions, but, nevertheless, some very interesting exhibits were shown. Many of these were of types of lanterns which, being 1939 designs, were the latest available. As might be expected, a number of systems of distant control of street lamps were shown, and it was clear that this feature of public lighting was receiving a great deal of attention both from the manufacturers and from lighting authorities. Pole and standard design, too, was a very live subject, although, naturally, it was only possible to demonstrate this by drawings or photographs. In the courtyard at the entrance to the exhibition a very handy "one-man" tower wagon was shown to the delegates.

[Some further particulars of these exhibits will be found on p. 129.—Ed.]

CLOCKWORK CONTROLLERS

CLOCKWORK CONTROLLERS for Public Lighting, Clocks, Control and Time Switches, Electric Clocks, and all types of instruments and appliances operated by clockwork, repaired and overhauled. Inquiries welcomed.—J. W. and R. E. Hughes (Clockwork Engineers), 58, Victoria-street, London, S.W.1. Phone: Victoria 0134.

Colour Discrimination in Insects

What should prove a fascinating item on the programme of the Colour Group is the lecture by Dora R. Ilse, D.Phil., F.Z.S., on "Methods of Investigating Colour Discrimination in Insects." Insects apparently differ greatly in their reactions to various parts of the spectrum, the responses of some extending well into the ultra-violet. Insects can be trained to seek food in distinctive-coloured areas, and by this means the ability of recognised colours can be readily checked.

Obituary

JAMES YOUNG FLETCHER

By the death of Mr. J. Y. Fletcher, a director of the General Electric Company, Ltd., the lighting field has lost a leading figure and the Illuminating Engineering Society one of its oldest members. Mr. Fletcher joined the G.E.C. in 1892. He subsequently opened the first branch in Ireland, where he remained until 1906, eventually returning to London and becoming manager of the Osram Lamp department. He joined the board in 1915, and continued at work until within a few weeks of his death. Mr. Fletcher had warm sympathies and wide interests. He was for many years hon. treasurer of the E.I.B.A. and a good friend to the I.E.S., always giving encouragement and practical help when needed.

EDWARD CARLTON COOTE

We record with regret the death, on August 27, of Mr. E. C. Coote.

Born in 1864, Mr. Coote's association with the B.T.H. dates from the 1880's. In 1901 he became London Supply Dept. Manager, later taking over the management of the company's lamp sales throughout the country.

During his long period of service—nearly 60 years—he witnessed many changes in the lighting field and made many firm friends, by whom he will be greatly missed.

Modern Street Lighting

Exhibits at the A.P.L.E. Conference

In addition to the account of proceedings at the recent A.P.L.E. Conference in Glasgow (see pp. 123-128) it may be of interest to put on record the list of exhibitors, as recorded in the official programme. Approximately 30 firms were represented, including most of those who participated in pre-war days, with a few newcomers.

The exhibition was naturally on a somewhat smaller scale than in the past, and appears to have included mainly familiar types of equipment—it will naturally take a little time before any very radically new designs make their appearance.

The exhibits can be conveniently grouped into four sections. Amongst the outstanding firms dealing with **electric street lighting lanterns** and accessory equipment were: The Brighton Lighting and Electrical Engineering Company, Ltd.; the British Thomson-Houston Company, Ltd.; The Edison Swan Electric Company, Ltd.; Engineering and Lighting Equipment Company, Ltd.; Falk, Stadelmann and Co., Ltd.; the General Electric Company, Ltd.; Holophane, Ltd.; Metropolitan Vickers Electrical Company, Ltd.; Philips Lamps, Ltd.; Revo Electric Company, Ltd.; Siemens Electric Lamps and Supplies, Ltd.; and the Street Lighting Apparatus Company.

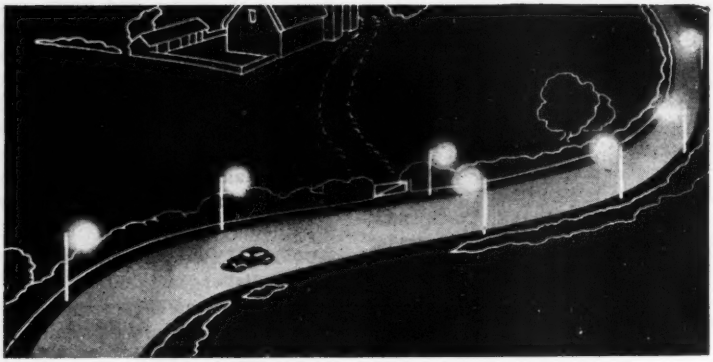
Gas Lighting was also well represented, the firms exhibiting in this connection being William Edgar and Son, Ltd., Foster and Pullen, Ltd., Keith Blackman, Ltd., Lighting Trades and Welsbach, Ltd., W. Parkinson and Co., William Sugg and Co., and Willey and Co.

Three exhibits were mainly concerned with **pillars and posts,** namely, Concrete Utilities, Ltd. (concrete columns and brackets, bollards, etc.), Poles, Ltd. (steel standards, brackets, etc.), and Stanton Ironworks Company, Ltd. (spun concrete lighting standards). To these may be added Gowshalls, Ltd., who specialised in illuminated guard posts and external lighting fittings for use with road signs, etc.

A fourth class is that dealing with **time switches** and other direct control apparatus as shown by the British, Foreign, and Colonial Automatic Light Controlling Company, Ltd., the Horstmann Gear Company, Ltd., the Record Electrical Company, Ltd., Sangamo Weston, Ltd., Sordoviso Switchgear, Ltd., and Venner Time Switches, Ltd.

The final section is that dealing with **systems of remote control** for street lamps. The Automatic Telephone and Electric Company, Ltd., demonstrated the "Rhythmatic" high frequency control equipment, aided by a pictorial representation of a city, and the General Electric Company, Ltd., showed their system of remote ripple control. Also to be mentioned in this connection is the exhibit of Radiovisor Parent, Ltd.; whose system is based on the photo-electric control of street lamps, etc., which are switched on automatically by the cessation of daylight and turned off again at dawn.

In the main the exhibits illustrated familiar and standard equipment, but the **concrete lantern** in the Siemens display is an interesting novelty, and likewise the new inspection pit lighting unit of the same firm, designed for use with fluorescent tubular lamps. Other forthcoming developments are promised, for example, the "Bleeco" flood lighting projectors for use in illuminating public buildings. Of some historic interest was the demonstration, by Lighting Trades and Welsbach, Ltd., of methods of "dimming" lighthouse mantles during the war period.



Single side mounting should be employed at long curves having a radius of curvature of less than 2,000 ft.

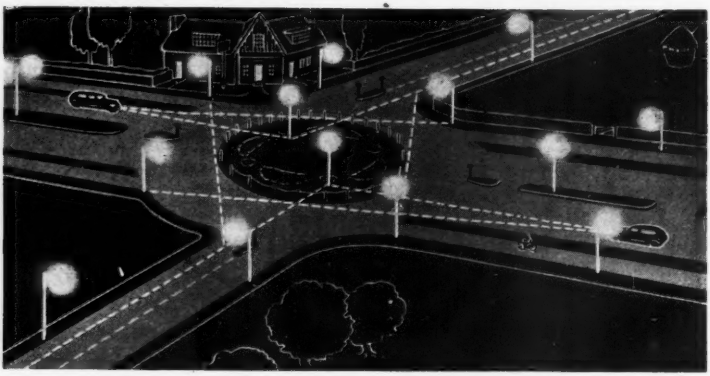
Street Lighting by Electricity

(Bulletin issued by the E.L.M.A. Lighting Service Bureau)

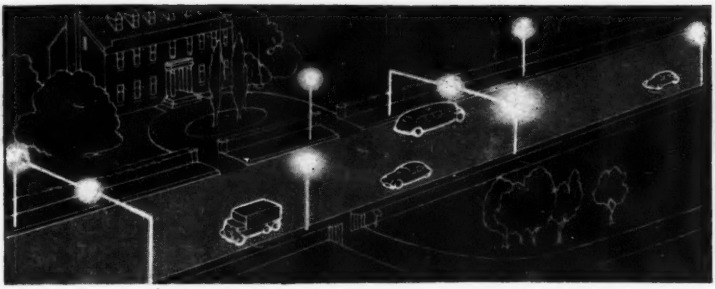
Although entitled "Street Lighting by Electricity," this bulletin might well serve as a guide to public lighting in general as, in the main, it sets out principles and methods common to all illuminants.

In the Introduction experience during the black-out is recalled, but it is pointed out that such devices as searchlights illuminating captive balloons and "kerb lighting" are not feasible projects for sustained public lighting. Reliance must be placed on technique in operation established prior to the outbreak of war.

The benefits of good lighting (including its value as a deterrent of crime) is emphasised, and its essentials are summarised as follows: (1) Efficient control of the light to produce a high background brightness, (2) Sufficient light at the source, (3) Correct mounting height of lanterns, (4) Correct spacing



The white broken lines cutting the apparent corners of the island and approach road represent the sight-lines of traffic approaching the roundabout. The lanterns on the island must be sited to face the oncoming traffic routes and mey be screened at the back if necessary.



For wide single-carriage-way roads an additional centrally suspended lantern should be added at each third span.

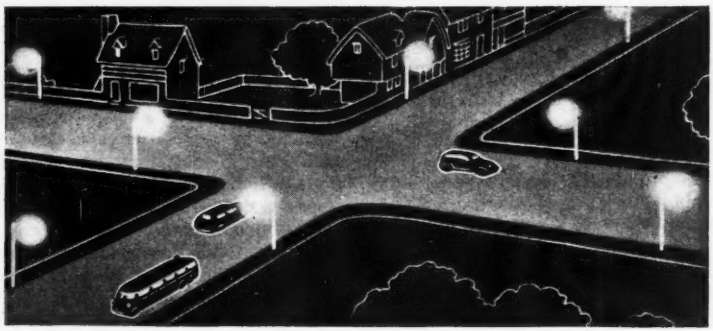
and siting of lanterns, (5) Avoidance of undue glare, (6) Properly constructed lanterns, high-quality lamps, and planned maintenance, and (7) Pleasing daylight appearance of lantern and column. Before proceeding to routine methods, the bulletin stresses the possibilities of decorative lighting in special areas—mentioning, as an illustration, the pylons erected at the entrance to the Mersey tunnel, as well as the high lighting in the tunnel itself.

In what follows a summary is given of the contents of the final report of the M.O.T. Departmental Committee, issued in 1937.

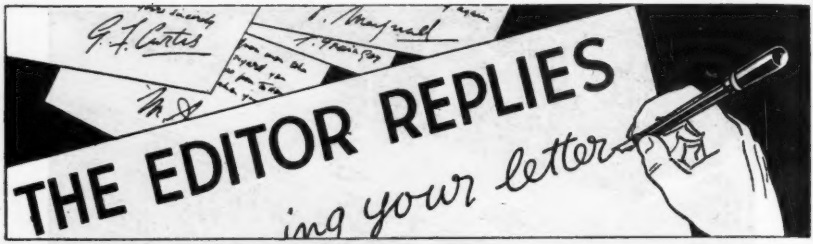
In this roads were divided into two classes—Group A (traffic routes) and Group B (all other routes)—for which separate recommendations are made. Amongst recommendations for Group A the most important are mounting height (25 ft.), spacing (preferably 120 ft. but not exceeding 150 ft.), power of lanterns (preferably 8,000 lumens per 100 linear ft. of road, but not less than 3,000 lumens per 100 ft.). In addition, an overhang of 5 ft. on roads 40 ft. wide, achieved by the use of brackets, is advised. Useful suggestions are made for the siting of lamps in various circumstances, and some of these are effectively illustrated in the illustrations accompanying this note. In addition, special attention is devoted to the lighting of dual carriageways, for which a width of 26 ft. between 20-ft. ways and not less than 6 ft. between dual carriageways of 30 ft. are recommended.

For Group B roads, mounting heights of 13-15 ft. (but preferably 15 ft.) are suggested, 100-120 ft. average spacing, and 600-2,500 lumens per 100 linear ft. of road.

In the final section, problems of maintenance and control, etc., are briefly discussed.



Any vehicle entering a crossing should be clearly visible to approaching traffic from all directions. Lanterns should be not more than 40 ft. from the intersection of the lines of the nearest kerbs, and not more than 120 ft. apart in any road.



I continue to receive occasional inquiries in regard to **Courses in Illuminating Engineering.** Progress in starting such courses depends mainly on the response to the notice recently published in this journal (July, 1945, p. 92), but I understand a course is actually being arranged at Stow College, Glasgow. There is also a fair prospect of at least two such courses being started—in London and in Yorkshire—and that something in connection with **Resettlement Education** may also be arranged.

Another not unusual query is for **books** dealing with lighting by means of the **new tubular discharge lamps.** Fluorescent Lighting is discussed in Mr. A. D. S. Atkinson's book (Geo. Newnes, Ltd., 1944), and a review of another more recent work emanating from the same publishers, "Luminous Tube Lighting," by H. A. Millar, appears in the present issue (p. 134). The subject is, however, far from exhausted as yet—more especially as regards the application of all these various tubular discharge lamps for purposes of illumination.

Other inquiries relate to particular problems with fluorescent lamps, e.g., **stroboscopic effects** and **running on d.c.** From personal experience I have formed the view that stroboscopic effects are not usually a serious trouble with this form of lamp, but they can be substantially avoided by arranging for the current in adjacent groups of lamps to be out of phase. Fluorescent lamps *can* be run on d.c. if sufficient resistance is inserted in the circuit and a polarity reversing switch is fitted, but overall efficiency is thus reduced and life is likely to be adversely affected. (See a recent bulletin issued by the E.L.M.A. Lighting Service Bureau.)

My attention has been drawn to a recent article in which it was remarked that **artificial lighting is unnatural.** Inasmuch as daylight occurs in nature and artificial light is the work of man this statement can hardly be disputed. It should not, however, be inferred that artificial light, being "unnatural," must impose more strain on the eyes than natural daylight. The fundamental requirements of good lighting are the same in either case, and the absence or presence of "strain" depends upon how perfectly these conditions are realised.

Conditions furnished by nature are not necessarily perfect (as we are reminded by occasional experience at Lord's Cricket Ground, when "bad light stops play"). **Daylight has obvious drawbacks** as compared with artificial light, notably the **enormous variations** with the season of the year, time of day, and climatic conditions, and the **unequal distribution** in rooms lighted by side windows. Glare and excessive contrast often introduce difficulties—as anyone will agree who has tried to observe detail with the sky as a background. Windows, too, being usually bright in comparison with the adjacent walls are liable to exhibit the fault of the cinema screen (excessive contrast with surroundings). It is for this reason that architects have commended the splayed win-

dows more usual in buildings of the past, which give the window frame a surround of moderate brightness. (Incidentally, I have recently been struck by the great improvement effected in this respect when adjacent woodwork is repainted in a light colour. This is one additional argument for **light styles of decoration.**)

The remarks above fit in with another point brought to my notice, the definition of **"veiling glare."** I am not sure that this term is defined in glossaries, but I take it to be the effect of a layer of brightness superimposed over the object viewed so as to reduce the contrast on which the distinctness of detail depends. Such a layer or veil may be formed by reflection from a polished surface, as when direct reflections of light sources from the dial of a clock make it difficult to see the time.

But it is more usually created by the **diffusion of light** by **suspended particles** in the atmosphere. In the dusty or smoky atmosphere of workshops such a luminous haze may interfere considerably with the view of distant objects. The effect is, however, common to natural and artificial light. In a rather lofty club smoking-room with which I am familiar the spread of light from the pendant sources of artificial light makes it most difficult to read the hands of the clock at the far end of the room, though the sources are screened by diffusing globes and there is no very evident direct glare. Daylight entering from side windows sometimes has the same effect.

Veiling glare is often in evidence **out of doors.** I can recall a visit to a famous football ground when spectators facing the declining sun found it most difficult to trace the course of the ball or the movements of players—especially when either entered the area of the ground shadowed by the grand stand in the background.

I have received with pleasure a letter from Mr. W. G. Darley (U.S.A.), who commends the statement in *Light and Lighting* for June, 1945 (p. 77), that **"contrast . . . is essential to the clear recognition of objects, and yet may become fatiguing if too pronounced."** Mr. Darley sends me a reprint of a contribution of his own bearing on this point. I agree that there is a limit to the desirable brightness ratio in the interests of comfort—though I should be inclined to say that when this limit is exceeded perception of detail may also suffer—as Lythgoe's familiar diagram suggests.

SITUATIONS VACANT

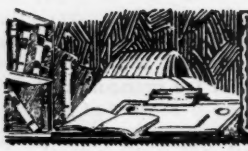
DRAUGHTSMAN wanted for lighting fittings and decorative metal work. A progressive London firm offers a permanent position with excellent prospects. —Write fullest details, in confidence, to Box 305, "Light and Lighting," 32, Victoria-street, London, S.W.1.

PHYSICIST for photometry required by light electrical manufacturers in S.W. London, aged 21-30. B.Sc. essential, and experience of colour measurement preferred.—Apply, giving full details, to Box No. 804, L.P.E., 110, St. Martin's-lane, W.C.2.

EXPERIENCED LIGHTING ENGINEER capable of planning industrial and commercial schemes required for work in London and Home Counties.—Apply in writing to Chief Personnel Officer, Crompton Parkinson, Ltd., Electra House, Victoria Embankment, W.C.2.

ASSISTANT DRAUGHTSMAN required in London capable of producing lighting lay-out plans from Survey Engineers' sketches. General knowledge of sheet metal practice, with ability to produce manufacturing drawings for lighting units, an advantage.—Apply in writing to Chief Personnel Officer, Crompton Parkinson, Ltd., Electra House, Victoria Embankment, W.C.2.

(The above two notices are intended for men over 51 or Class A released ex-Service men.)



REVIEWS OF BOOKS AND PUBLICATIONS RECEIVED

Luminous Tube Lighting. By H. A. Millar. (Geo. Newnes, Ltd., London, 1945; pp. 143; figs. 78. Price 10s. 6d.)

This book deals with the construction and performance of luminous tubes rather than their application for lighting in the ordinary sense. The first two chapters deal with introductory matters, the third with materials (special attention being devoted to glass) and the fourth with manufacturing equipment. Chapters 5 and 6, devoted respectively to low pressure and high pressure tubes, and Chapter 7 entitled "The New Fluorescent Lamp," discuss the nature and construction of various forms of lamps and their mode of operation. Chapter 8 ("Data and Tests") is concerned mainly with operating characteristics, and Chapter 9 with Neon Signs, whilst the contents of the final brief chapter are fitly indicated by its description "Miscellaneous," covering as it does such items as aerial beacons, television, the production of oscillations and—rather oddly last of all—the tungsten mercury arc.

It will be seen, therefore, that the book covers a wide field, and it is chiefly in connection with gaseous discharge lamps of the neon type that the author reveals practical experience of working conditions. It is a little singular that in Chapter 7 it is only by inference that the reader recognises that the familiar 5 ft. fluorescent lamp is intended. Although accessories are described and certain diagrams illustrating operating conditions are given, the usual data in regard to consumption, dimensions, light output and efficiency are not stated—though in the next chapter a diagram comparing graphically the efficiencies of various sources is given. Similarly comparative data for the brightness of certain sources are given, though the unit adopted is not stated in this table, and the fluorescent lamp does not appear.

The book, however, contains a considerable amount of miscellaneous information. It is also fully illustrated, though in a subsequent edition some of the references to trade names and firms associated with pictures and diagrams might well be omitted.

Fluorescent Lamps. (Tech. Supplement No. 1. Issued by the E.L.M.A. Lighting Service Bureau, London, 1945.)

This little 12-page leaflet contains quite a lot of useful information in regard to the 80-watt 5 ft. fluorescent lamp. Its chief advantages are summarised and illustrated by photographs of installations and useful design data, enabling foot-candles to be predicted, are presented. Under the title of "Technical Data," the process of energy conversion (from electrical input to u.v. radiation and thence to light and radiated heat) is explained. It may come as a surprise to note that even in this highly efficient lamp, only 16 out of 80 watts are represented by light, the remainder ultimately emerging as radiated, convected and conducted heat. Another diagram shows the distribution of spectral of "daylight" and "warm white" fluorescent lamps as compared with June sunlight and gas-filled tungsten lamps. The leaflet is concluded by some useful servicing notes and such matters as accessories, power factor correction and operation on D.C. circuits are briefly discussed.

The Standards Review, No. 2, 1945. (British Standards Institution, 28, Victoria Street, London, S.W.1.)

The second issue of this review, issued quarterly, is again most readable and pleasantly illustrated. There are this time several notes bearing directly on illuminating engineering, such as the reference to standardisation under the title, "Light in the Public Service," and the illustration of a proposed British Standard cast-iron lamp-post. Another note, dealing with the standardisation of shop signs, contains illustrations designed by Eric Fraser and shows that even in this field some degree of standardisation may be combined with distinctive effect.